

CLAIMS

1. Device for determining flow parameters, particularly the temperature, the flow velocity, the flow resistance and its change, in a stream of fluid to be monitored, particularly in smoke and gas intake detectors, having a thermoelectric air stream sensor (1) that is operated in a constant temperature mode, a thermoelectric temperature sensor (2), and a regulation circuit (3) for setting an excess temperature ΔT at the air stream sensor (1), characterized in that the regulation circuit (3) implemented in a microprocessor (4) contains a regulation algorithm, by way of which the excess temperature ΔT at the air stream sensor (1) is kept constant.
2. Device according to claim 1, characterized in that the microprocessor (4) furthermore comprises an evaluation algorithm for calculating flow parameters on the basis of the electric heating power P of the air stream sensor (1), particularly for calculating the mass stream N , the flow velocity w , the volume stream V , and the flow resistance F_w

of an intake pipe system (13), and the temperature T of the fluid stream.

3. Device according to claim 1 or 2,
characterized in that
the evaluation algorithm includes the compensation of a temperature-dependent and/or pressure-dependent density change of the fluid stream.
4. Device according to one of the preceding claims,
characterized in that
the microprocessor (4) contains a memory for storing starting values of the flow parameters, for calculating status changes in the flow parameters in the evaluation algorithm.
5. Device according to one of the preceding claims,
characterized in that
the evaluation algorithm includes the recognition of small, sudden flow changes, particularly volume stream changes, of the fluid stream.

6. Method for operating a device according to one of the preceding claims,
characterized in that
the air stream sensor (1) is increased to a peak temperature value for a short period of time.
7. Method according to claim 6,
characterized in that
the temperature is 500°C.
8. Method for determining flow parameters, particularly the temperature T , the flow velocity w , and its change Δw , in a fluid stream to be monitored, particularly in smoke and gas intake detectors, having the following method steps:
 - a) Determination of the fluid temperature T by means of a thermoelectric temperature sensor (2);
 - b) Regulation of the constant excess temperature ΔT set at a thermoelectric air stream sensor (1), operated in constant temperature mode, as a function of the fluid temperature T ;

c) Determination of the amount of heat Q removed from the thermoelectric air stream sensor (1); and

d) Calculation of flow parameters, particularly the temperature

T , the flow velocity w , and its change Δw , the flow resistance F_w and its change ΔF_w , on the basis of the amount of heat Q removed, by means of an evaluation algorithm implemented in the microprocessor (4).

9. Method according to claim 8, having the following additional method steps after method step d):

e) Compensation of the temperature-dependent and/or pressure-dependent fluid density change at the flow parameters determined under method step d).

10. Method according to claim 8 or 9, having the following additional method step after method step e):

f) Determination of time changes, particularly small, sudden volume stream changes, of the flow parameters determined under point d).

11. Aspirative fire recognition device and/or oxygen measurement device, which constantly takes samples of space air or equipment cooling air from a space or piece of equipment (12) to be monitored, and feeds them to a detector (8), via a pipeline system (13), for detecting a fire characteristic value and/or other gases, particularly oxygen, characterized by a device for determining flow parameters according to one of claims 1 to 4.
12. Aspirative fire recognition device and/or oxygen measurement device according to claim 11, characterized in that the air stream sensor (1) and/or the temperature sensor (2) are integrated into the detector (8), particularly in the center of the air entry channel (9) of the detector (8).
13. Device according to claim 11 or 12, characterized in that

the air stream sensor (1) is disposed in a position in the air entry channel (9) of the detector (8) that is narrowed in cross-section.